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ABSTRACT

The Curriculum and Research Development Center of Indiana State University sought to determine the number of high schools in Indiana that teach environmental education in some form. A questionnaire was mailed in February 1974 to the principals of all senior high, junior/senior high, and K-12 schools. The investigators were interested in finding out how much environmental education was offered, content areas, how it was taught, subject matter necessary for teacher preparation, priorities of environmental problems, and importance in the high school curriculum. A few of the major findings were: 6.5 percent of the 366 schools offered courses designated as environmental education; 21 percent offered courses although not so designated. Class enrollment ranged from 10 to 60 and average number of course offerings was there. Subject areas most often taught included water and air pollution, forest conservation, soil conservation, and wildlife conservation. Topic emphasis lead researchers to conclude that in Indiana high schools, conservation was environmental education. Recommendations called for the implementation of a nation-wide environmental education plan. Suggestions include a national conference of leaders to give direction to curriculum efforts, a test to students to determine environmental knowledge, inservice and preservice workshops, textbook revisions, etc. An annotated bibliography is provided. (BP)

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ENVIRONMENTAL EDUCATION IN INDIANA PUBLIC SCHOOLS

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School of Education, Indiana State University

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PREFACE

Undoubtedly there is much of mankind that believes that man is somehow separate from the Universe and is God-like in his divine creation. But more and more of mankind are re-defining man with humility. They see man only as a specialized animal who is tied to earth and to ultimate death. Like an animal, he must breathe air, drink water, eat off the land. Neither God nor science can save him from his own selfish, foolish mistakes. He must live in the real world--with blood and tears, as well as with hope and dreams. Man must become a responsible creature to endure and not slough off the awesome responsibility to tomorrow--to abstractism and foolish hopes.

Possibly man has matured. No longer does every man see the moon, the stars, the sun revolving around him. At last, some men have recognized the possibility that an individual existence may be more than a minute in the universe, that man may have created monsters that will boomerang to his own self-destruction.

Perhaps what makes individual death endurable is the knowledge that the stream of life goes on--books, paintings, ideas, children . . . . If only this passion could be enlarged to encompass the larger parameters of life: The destruction of any other species of fauna or flora destroys ever so small a part of man. Man is but a part of the pyramid of life, and he who would destroy even the smallest of creatures will in the end find the cold knife against his own throat.

In a sense, this is what environmental education is all about: Man re-defining his own existence. He is casting off his arrogant classical tradition; and instead he is learning to cope, to interact with a world he did not make.

Russell L. Hamm
Professor of Education

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At the national level, Public Law 91-516 defines environmental education as:

The educational process dealing with man's relationship with his natural and manmade surroundings, and including the relation of population, pollution, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning, to the total human environment.

Public Law 91-516
(sec. 3. (3) (1)

Chapter 1

INTRODUCTION TO ENVIRONMENTAL EDUCATION

The ever accelerating number of crises--the energy crisis, the pollution crisis, the food crisis--has forced Americans to take the environment seriously. As never before, Americans have come to recognize that man's planet Earth is small, that every man is brother, that what affects the smallest creature also affects man, whether in ocean or on land. As Lewis Mumford has stated, it is "only through maintaining constant intercourse with his complex surroundings, including his own organs, that man's delicate mind can be kept in balance."[1]

With his own naked eyes, man can see his fellow human beings stripped bare--in the city jungle, in the rural wasteland. His eyes water and his throat burns with pollution. The smell of waste and garbage is nauseous. The noise of technology is deafening. In this context, there can be no question about the necessity of environmental education. The concern now is with how, when and where.

Perhaps the significant element in environmental education is its interactive, rather than its reactive, point of view. Dr. Ishisaka pointed to this factor in an address in 1969. He said:

> If the health of the public has improved in many regions during recent decades, the improvement is due not only to certain medical procedures, but also--and probably to a greater extent--to better understanding of the effects of man's environment and way of life on his physiological and mental health.[2]

When man becomes concerned with environmental consequences, with the assumption and implications of what he considers to be the truth of the matter, he will be more concerned with preventing rather than correcting the abuses to environment and to man. Some writers do not see man as having reached this new awareness of his relationship to the environment. Lewis Mumford for one has written:

> For lack of this wariness today not only do millions of human beings live in the shadow of a total catastrophe, but the air they breathe, the water they drink, and the food they eat are being poisoned by other misapplications of scientific knowledge.[3]

Questions that haunt: In his selfishness and egocentricity, has man forever lost his last chance for survival? Is even now too late?

Definition

V. Eugene Vivian says environmental education is not the same as either outdoor education or conservation education. He says that environmental education contains all of both but has the restrictions of neither. To him, the frame of reference is larger than the combination of both.

> Instead of being concerned chiefly with the management of resources such as soil, water, forests, wildlife, and air, environmental education is also concerned with all aspects of the social environments of man, with man-made environments and their effects both on man and on all of the "natural environment."[4]

To Vivian, then environmental education has as its focus man and his relationship to, and use and control of, all environments.

The Indiana Environmental Education Advisory Committee makes much the same point. Environmental education is distinguished from conservation education as follows: The newer term attempts to describe more precisely our efforts to come to grips with the degradation of man's surroundings from an ecological approach.[5] The committee goes on to say that yesterday water, soil conservation, etc., were treated as separate units, but that today the ecological unity of all man-land relationships is the unit for study. The primary concern, the committee believes, of the new environmentalism is for the survival of nothing less than the human species itself. "The emotional basis of the new environmentalism," they write, "is founded more on concern for man's tomorrow than on love for nature's yesterday."[6]

George E. Arnstein in defining environmental education writes: "It must deal with values and attitudes, and these values must be

based on understandings of how we hope to manage the environment."[7] In addition, Arnstein writes that we must have a vision to see the environment as a whole. Environmental education must be viewed in a context broader than that of "the bird watcher, the salesman of air filters, the anti-litter crusade, or any one of the other fragmented advocates each of whom may be honest, bold, high-minded . . . ."[8]

By using a new designation, perhaps latent emotional connotations relating to outdoor education, conservation education, even nature study, can be avoided and a fresh start be made. Maybe the name itself more truly implies what we should be about. But the major consideration has to be in operational outcomes rather than in purely descriptive objectives. Prime concern has to be with what goes on in the teaching-learning context. In this sense, it is not what we call a course but what happens in the course--and here the teacher makes all the difference.

Curricular Evolution

The first secondary schools in the United States were Latin Grammar Schools with a limited curriculum for a select student body. These schools were conducted in Latin. There was some teaching of religion, and a smattering of Greek. Even writing and arithmetic were often neglected or ignored. Colonial schooling in no sense taught anything about environmental education.

Only with the coming of the academies did the rudiments of courses which perhaps foreshadowed the emergence of conservation--environmental education begin to develop. George F. Miller's study of The Academy System of the State of New York[9] lists the first reporting of the following subjects as follows:

Chemistry, 1825
Botany, 1827
Zoology, 1828
Philosophy, Natural and Chemical, 1828
Geography, Physical, 1828
Natural History, 1830
Philosophy, Vegetable, 1831
Political Economy, 1832
Physiology, 1835
Anatomy, 1837
Chemistry, Agriculture, 1841

Calisthenics, 1841
Ornithology, 1847
Hygiene, 1849
Gymnastics, 1849
Domestic Economy, 1850
Statistics and Dynamics, 1852

In 1864, George P. Marsh published Man and Nature, or Physical Geography Modified by Human Action, which has been called the fountainhead of the conservation movement; and in 1873, Franklin B. Hough read a paper before the American Association for the Advancement of Science stressing the importance of retaining large areas of public forests. Although significant books were written, important speeches made and much legislation passed focusing upon conservation, not until 1935 did conservation education become a school matter.

Beginning in 1935, educational journals carried numerous articles on conservation. The textbooks published during the 1930's also reflect an increased interest in conservation, especially in science and social studies texts. In 1937, the Commissioner of Education called a national conference on conservation education. One of the recommendations of this conference was that the Office of Education expand its program in the field of conservation education to take care of the growing needs of the schools. Significantly, four separate bibliographies on conservation materials were issued by the U.S. Office of Education in 1938.

In 1948-1950, the Biennial Survey of Education in the United States listed 274 specific subject titles being offered in some public secondary schools.[10] The following subject titles are noteworthy:

World Geography: Man In His Environment
Conservation
Agriculture I, II, III, IV
Health: Narcotics
Physical Education: Recreational Leadership
Related Science: Horticulture
Applied Biology including Social Biology: Eugenics
Earth Science
Nature Study

Not until the decade of the 1960's was there a new awakening in conservation. Perhaps Rachel Carson's Silent Spring (1962) more than anything else brought about this new awakening and new definition of conservation education. H. Seymour Fowler noted that conservation was not just a rural concern.[11] Albert Dorsey insisted that environmental resources must include human resources, economic resources, and sociological and governmental resources as well as national resources.[12] As Russell Train expressed it: "Conservation is for man and we should learn to appreciate the effects of environment upon individual and social behavior."[13] More and more schools, under a variety of designations, incorporated conservation education into the curriculum.

The decade of the 1970's has witnessed a new designation--environmental education. Environmental education is not simply an outgrowth of the new conservation education movement. Environmental education is more encompassing, more man-centered, more inter-disciplinary.

Environmental education in theory significantly differs from nature study, conservation education, outdoor education. The question that needs to be asked: What happens when theory is translated into educational practice--in the individual classroom?

Related Research

Surprisingly, a considerable amount of descriptive survey research has been done in Indiana on environmental and conservation education. As recently as 1973, Eugene C. Dziubinski did a questionnaire survey of secondary schools in the state.[14] His study concentrated on forty-nine schools which had indicated they had an established environmental studies program. He concluded that the involvement in the environmental studies area in the state was limited to only 11% of the high schools. Findings in the Dziubinski study that relate to this study are the following:

The most popular name given to the environmental study programs were ecology, environmental conservation, environmental health, man and his environment, and natural resources.

Dziubinski found a study emphasis in the science area, but he discovered some schools were setting up interdepartmental programs. Topics most frequently taught in the forty-nine schools were air pollution, ecology, population, soils, and wildlife.

Out of the forty-nine schools, nineteen used no text. The most popular texts used by the remaining thirty schools were the following:

Patterns for Preservation, by Tillotson;
Our Natural Resources, by McNall and Kircher;
What's Ecology, by McCombs and Rosa;
Field Biology and Ecology, by Benton and Werner

The survey also indicated that environmental study programs were basically for juniors and seniors.

In an earlier survey study by Howard H. Michaud and L. R. Hilterbrand (1969), the question was asked, "What instructional area or areas taught the most conservation in your school?" (The answer: Biology followed closely by agriculture.)[15]

The most significant aspect of the Michaud-Hilterbrand study was a comparison of their study to a similar study done in the state in 1949 to determine whether any significant changes had occurred in conservation education during the past twenty years. Many similarities were found that indicated rather slight changes in the overall conservation emphasis in the public school curricula.[16] However, they did discover from the more recent survey that more extracurricular activities devote attention to conservation. Ranked in order of importance were 4-H, Boy Scouts, FFA, Girl Scouts, and science clubs.

One encouraging result found in the Michaud-Hilterbrand study was the emergence of a substantial number of school-owned properties being used as land laboratories. But the investigators indicated that perhaps the most heartening aspect of their study was the school administrators' awareness of the need for greater emphasis to environmental education.

In 1967, a survey of public and private senior high schools in Indiana on the status of conservation education indicated that the greatest number of schools (86%) teach conservation through integration of subject matter.[17] A somewhat surprising finding of one study was the fact that 35 schools (7%) indicated that they did not teach conservation. Only four schools offered a course designated as conservation education, while 31 schools offered a traditional course that for all practical purposes was conservation. This same study also indicated that biology, agriculture, American history, and senior social studies bear the major responsibility for teaching

conservation education. Only two percent of the schools in the study indicated their schools had a conservation club, and only six percent of the schools indicated their schools had a summer activity, such as camping, related to conservation education.

The Future

Now the question becomes: Will environmental education be nothing more than a new name, will it become nothing more than a new facet of the back to basics movement--that is, nature study? Or will environmental education establish new goals and guidelines for man in his relationship with nature? Will environmental education be progress with a difference?

NOTES

1. Lewis Mumford, The Myth of the Machine: The Pentagon of Power (New York: Harcourt Brace Jovanovich, Inc., 1970), p. 55.

2. Howard Ishisaka, first lecture delivered in Boston, July, 1969, 22nd World Health Assembly, reprinted Vol. 23, No. 11, WHO Chronicle.

3. Mumford, The Myth, p. 75.

4. V. Eugene Vivian, Sourcebook for Environmental Education (St. Louis: The C. V. Mosby Company, 1973).

5. Total Environment Education, published by Indiana State Department of Public Instruction, 1973, p. 1.

6. Ibid.

7. George E. Arnstein, "What Is Environmental Education?" Journal of Environmental Education, Vol. 3, No. 1, (Fall, 1971), 8.

8. Ibid, p. 2.

9. George F. Miller, The Academy System of the State of New York, Fifteenth Annual Report of the New York State Education Department, Vol. 2, University of the State of New York, 1922.

10. United States Office of Education, Biennial Survey of Education in the United States, 1948-1950, Chapter 5, "Offerings and Enrollments in High School Subjects, pp. 109-118.

11. H. Seymour Fowler, "Conservation Education and High School Teaching," The American Biology Teacher, September, 1966, p. 256.

12. Albert H. Dorsey, "The Conservation Improvement Project," The Science Teacher, April, 1967, p. 49.

13. Russell E. Train, "A Conservationist's View of Conservation," The Science Teacher, April, 1967, p. 25.

14. Eugene C. Dziubinski, A Survey of Indiana School Corporations Regarding Environmental Study Programs on the High School Level, unpublished M.A. paper, Ball State University, Muncie, Indiana, 1973.

15. Howard H. Michaud and L. R. Hilterbrand, "Conservation Education in Indiana," The Journal of Environmental Education, Vol. 3, No. 3 (Spring, 1972), 39.

16. Howard H. Michaud and R. H. Hilt, "The Extent of Conservation in the Secondary Schools of Indiana, School Science and Mathematics, Vol. 49 (January, 1949), 33-38.

17. Russell L. Hamm, Conservation Education in Indiana Schools (Terre Haute, Ind: Curriculum Research and Development Center, School of Education, Indiana State University, December, 1967).

Chapter 2

ENVIRONMENTAL EDUCATION -- A SURVEY OF THE STATUS IN THE SENIOR HIGH SCHOOLS IN INDIANA

To determine the number of high schools in Indiana that teach environmental education in some form, a questionnaire was mailed in February, 1974, to the principals of all senior high schools, junior/senior high schools, and K-12 schools in the state. The investigators were not only interested in how much environmental education was offered, but also where it was offered and how it was taught. In addition, the investigators wanted to determine what subject matter educators thought important in teacher preparation, priorities of environmental problem areas in today's society, place and importance of environmental education in the high school curriculum, and content areas being taught as a part of environmental education courses.

Questionnaires were sent to all principals of the 229 senior high schools. By May, 1974, 212 questionnaires (92.5%) had been returned. The data supplied by the principals of grades 10 through 12 were then tabulated in a sequence which corresponded to the order of the questions on the questionnaire. The questions and interpretations of the data follow.

1. Does your high school offer a course designated as environmental education?

   Yes: 18 schools No: 153 schools

2. Does your high school offer a course in environmental education although not so designated?

   Yes: 41 No: 153

Only 18 (8.5%) high schools teach an environmental education course in their curriculums. All 18 schools offered the course on an elective basis. Thirteen of the principals, however, listed the course in the class schedules under the titles:

Ecology - 5 schools
Environmental Science - 2 schools
Conservation - 2 schools
Environmental Geography - 1 school
Ecology and Zoology - 1 school
Man and His Environment - 1 school
Earth Science - 1 school

So there are really only five (2.3%) high schools offering a course with the specific title of environmental education in Indiana high schools.

Forty-one of the responding principals (19.3%) stated that their schools offered courses in environmental education although not so titled. If environmental education is generally taught in other courses, what courses bear the responsibility for teaching environmental education?

Table 2.1 indicates the courses in which environmental education is taught.

Thirty-two of the 41 schools teaching environment education under another title offered the courses as electives. Interestingly, only three schools required the courses be taken by all students.

Thus, in their responses to questions 1 and 2, a total of 59 principals (27.8%) indicated that their high schools were teaching some type of environmental education course in their curriculums: 18 designated the course environmental education and 41 others indicated environmental education under some other title. Fifty (84.75%) of the 59 schools offered the courses as electives and three schools (5.1%) required the courses for graduation from high school. There was no response given by six principals (10.15%) on the question of required or elective courses.

In Indiana high schools, ecology, conservation, and earth science titles are used most frequently to describe courses in environmental education.

Thirty-seven schools teach environmental education on a semester schedule. Eighteen schools schedule courses for two semesters or an academic year. Four principals listed courses in the class schedules for calendar periods of one quarter, one-half semester, and one semester or one year.

TABLE 2.1

COURSES IN WHICH ENVIRONMENTAL
EDUCATION IS TAUGHT IN INDIANA SENIOR HIGH SCHOOLS

COURSE TITLE	NUMBER OF SCHOOLS
Ecology	8
Conservation	5
Earth Science	3
Integrated Science	1
Natural Science	1
Environmental Ecology	1
Ecology and Life	1
Advanced Biology With Emphasis on Environment	1
Environmental Biology	1
World Historic Development	1
Conservation and Wildlife	1
Environmental Science	1
Biology	1
Ecology and Conservation	1
Biology Environmental Conservation	1
Conservation and Vocational Agriculture	1
Summer Program for Teachers	1
Ecology and Drug Education	1
Field Biology	1
Biology I	1
Field Study	1
Bio-Ag Classes	1
Wildlife and Forestry	1
Special Units in Health, Government and Social Studies	1
Effects of Alcohol, Narcotics, Tobacco on the Human Body	1
Life Science	1
Earth Materials	1
Conservation and Vocational Agriculture	1

Students enrolled in grades 9 through 12 were eligible to enroll in the environmental education courses. However, the classes were mainly composed of sophomores, juniors, and seniors. Few freshmen were given permission or encouraged to enroll. The heaviest enrollments came through junior and senior students.

The number of classes scheduled among the 59 schools ranged from 22 classes in one school to only one class in 18 schools. The average number of classes per school was three. A total number of 177 environmental education classes was offered in the 59 schools.

The total student enrollment in the 177 class sections was 4,048. Class sizes ranged from 12 to 60 students. The average class size was 24 students.

The researchers desired to learn what subject areas were being taught in environmental education courses offered in the 59 schools. Table 2.2 shows the results of this query.

Water pollution, air pollution, forest conservation, wildlife conservation, soil conservation, and the energy crisis were given the greatest emphasis in environmental education classes.

The selection of a textbook for an environmental education course seems to be a problem in high schools. Eleven principals indicated that the courses were being taught without benefit of a textbook. Twenty-seven schools were using textbooks; however, they used 19 different textbooks. Each book lends itself to special topics and concentrations, thus leading to a wide diversification of subject matter coverage. Twenty-one schools did not respond to the question of texts used.

3. If your school does not offer a course in environmental education, is environmental education taught by selected units in other courses?

Yes: 143 No: 7 No response: 3

Responses to this question are given in Table 2.3.

Another 22 courses were cited by at least one principal as having environmental education units taught in them. So environmental education is being taught in 30 different courses in Indiana high

schools through special curriculum units.

TABLE 2.2

SUBJECT AREAS TAUGHT IN ENVIRONMENTAL EDUCATION COURSES IN INDIANA SENIOR HIGH SCHOOLS

SUBJECT AREAS	NUMBER OF SCHOOLS	PERCENTAGE
Water Pollution	50	84.7
Air Pollution	48	81.3
Forest Conservation	45	76.2
Wildlife Conservation	44	74.5
Soil Conservation	43	72.8
Energy Crisis	41	69.4
Agriculture Pollution	33	55.9
Environmental Economics	29	49.1
Birth Control	24	40.6
Foods	20	33.8
Drug Education	14	23.7
Disease Education	14	23.7
Housing	14	23.7
Race Relations	4	6.7
Medical Care and Costs	3	5.0
Crime Control	2	3.3
Basic Ecology	2	3.3
Demography	1	1.6
Solid Waste	1	1.6
Thermal Pollution	1	1.6
Population	1	1.6
City Planning and Development	1	1.6
Radioactive Pollution	1	1.6
Pesticide Problems	1	1.6
Population Dynamics	1	1.6
Science and Recreation	1	1.6

TABLE 2.3

COURSES IN WHICH ENVIRONMENTAL EDUCATION
IS TAUGHT AS A SPECIAL UNIT IN INDIANA SENIOR HIGH SCHOOLS

COURSE TITLE	NUMBER OF SCHOOLS
Biology	115
Health Education	70
General Science	55
Earth Science	50
Agriculture	49
Sociology	49
Senior Social Studies	35
American History	30

4. If your school does not offer a course in environmental education as part of the regular curriculum, is it offered as a part of the extracurricular or club program of the school?

Fifty-five school principals answered the question Yes. Examples of the environmental education clubs and extracurricular activities were: Future Farmers of America, Sunshine Society, Environmental Club, Naturalist Club, Biology Club, Ecology Club, Science Club, 4-H Club, Student Council, and Conservation Club. Club and extracurricular activities centered on student meetings built around selected topics and special projects for improving the school and community environment.

5. If your school does not offer a course in environmental education during the regular school year, is it offered as a part of the summer school program?

Fourteen (6.6%) out of 212 schools offered environmental education courses as part of their summer programs. The courses offered were concentrated on activities directly related to 4-H Clubs, biology field study, agriculture summer programs, forestry, earth science, and summer camps. Most of the principals who answered No to the

question were of the opinion that financial conditions and limited summer enrollments restrict summer school course offerings. In entirely rural school areas, a lack of buses being operated in the summer detracts from and influences summer school enrollments and programs.

6. In your personal opinion, do you think environmental education should be a part of your high school's curricular offering?

Yes: 179 No: 22 No Response: 1

A review of the 179 affirmative answers allows the researchers to report that 62 principals want environmental education taught as a separate course, 106 desire to place special units on environmental education in other courses, 26 elect to schedule environmental education as an extracurricular activity, and 18 favor environmental education courses as strictly summer school possibilities.

A majority of the principals answering the question No thought that environmental education is being given adequate instruction in other courses. They think more students can be reached by offering areas or units in the required life and earth science courses. An example is biology.

Equal registration opportunities were provided to students, freshmen through seniors, to enroll in environmental education courses in Indiana high schools. There was no separation of students by class standing when scheduling environmental education classes in the total curriculum. Some schools require that courses be taken in a sequence which is conducive to enhancing the learning conditions.

7. In your opinion, what professional courses should an environmental educator have?

Table 2.4 shows the courses chosen by the principals for inclusion in the professional preparation of environmental educators.

In Indiana high schools courses in conservation, biology, environmental health, chemistry, and community resources offer the best professional preparation opportunities for environmental educators, according to the principals. Many administrators thought all the subjects on the list deserved due consideration by environmental education teacher candidates; thus, indicating that each subject area

has some practical application to the environment of man.

TABLE 2.4

SUBJECTS RECOMMENDED BY INDIANA SENIOR HIGH SCHOOL PRINCIPALS FOR TEACHER PREPARATION IN ENVIRONMENTAL EDUCATION

SUBJECT	FREQUENCY OF RESPONSE	SUBJECT	FREQUENCY OF RESPONSE
Conservation	172	Physics	51
Biology	164	Statistics	48
Environmental Health	145	Physiology	47
Chemistry	128	Political Science	45
Community Resources	119	Limnology	38
Health Education	95	Mathematics	30
Public Health Education	88	Human Anatomy	28
Zoology	88	Epidemiology	26
Microbiology	65	Ecology	5
Nutrition	58	Sociology	2
Research	54	Computer Science	1
Genetics	53	Forestry	1

8. What aspects of environmental education should be given highest priority?

Table 2.5 indicates the priorities given to topic areas in environmental education classes.

There was a unanimous vote on the number one environmental problem facing the United States and the world, the energy crisis. Topics ranked 2 through 5 were in the top five priorities cited by every participant in the study; however, they were not found to be at the same ranking in each case.

Perhaps an interesting follow-up to this finding would be to ask students to identify their priorities in environmental education topics. Would there be differences in opinion between students and

principals? The topic would certainly be an interesting focal point for class discussion.

TABLE 2.5

PRIORITY AND RANK ORDER OF ENVIRONMENTAL EDUCATION TOPICS AS SELECTED BY INDIANA SENIOR HIGH SCHOOL PRINCIPALS

TOPIC	SCORE*	RANK
Energy Crisis	524	1
Air Pollution	504	2
Water Pollution	491	3
Birth Control	250	4
Soil Conservation	167	5
Drug Education	157	6
Environmental Economics	147	7
Crime Control	112	8
Wildlife Conservation	102	9
Forest Conservation	88	10
Agriculture Pollution	86	11
Foods	85	12
Disease Education	70	13
Race Relations	69	14
Medical and Costs	57	15
Housing	44	16

*Priority score is determined by a total of the ranks given by the principals. (Rank one = 10 points, two = 9, etc.)

Chapter 3

ENVIRONMENTAL EDUCATION -- A SURVEY OF THE STATUS IN THE JUNIOR/SENIOR HIGH SCHOOLS IN INDIANA

The questionnaire was mailed in February, 1974, to all 117 principals of junior-senior high schools in the State of Indiana. Again, the researchers wanted to ascertain how much environmental education was taught, where, and how it was taught. They asked the school administrators to identify subject areas prospective teachers of environmental education ought to include in their professional preparation, the rank and priorities for topics taught in environmental education classes, and the place and importance of environmental education in the school curriculum.

By May, 1974, 112 questionnaires (95.7%) had been returned. The data were analyzed question by question. The interpretations of the data along with the questions follow.

1. Does your high school offer a course designated environmental education?

   Yes: 5 No: 107

2. Does your high school offer a course in environmental education, although not so designated?

   Yes: 23 No: 84

However, only one of the five courses offered was designated as environmental education. The other four courses are designated as ecology (2), conservation (1), and biology (1) in the schedule of classes.

The titles shown in Table 3.1 were used by the 23 schools to identify their environmental education course offerings:

TABLE 3.1

COURSES IN WHICH ENVIRONMENTAL
EDUCATION IS TAUGHT IN INDIANA JUNIOR/SENIOR HIGH SCHOOLS

COURSE TITLE	NUMBER OF SCHOOLS
Conservation	5
Ecology	4
Biology	3
Natural Resources Management	1
Wildlife Ecology	1
Environmental Health	1
Vocational Agriculture	1
Soil Conservation and Wildlife	1
Earth Science	1
Agriculture Education	1
Outdoor Education and Recreation	1
General Science	1
Applied Life Sciences	1
Vocational Information	1

The titles most frequently used to mean environmental education are conservation, ecology, and biology. Other than these three titles, the description of the course is unique to the school.

Of the 28 schools offering an environmental education course in their curriculum, 4 required it of all students, 21 offered it as an elective, and 3 schools did not respond.

Sixteen schools scheduled the course on a semester plan, six by the academic year, two on a half-semester basis, and six schools did not respond.

Students in grades 9 through 12 are eligible to enroll in the environmental education classes. Additionally, the course is scheduled in a sequence along with other courses.

The number of classes offered ranged from five in one school to one class in each of nine schools. Class size ranged from 15 students per class to 125 in five classes or 140 in four classes in one school. Since the number of classes in the twenty-eight schools was 43 and there was a total enrollment of 981 students, the average class was about 23.

Eighteen of the 28 schools (64.2%) responding did not use a text in their environmental education classes. Three of the schools were utilizing teacher-made materials for student study. No two of the remaining 7 schools used the same textbook. The selection of a textbook is left to the discretion of the individual school.

Subject areas taught in environmental education in the 29 schools are shown in Table 3.2

TABLE 3.2

SUBJECT AREAS TAUGHT IN ENVIRONMENTAL EDUCATION COURSES IN INDIANA JUNIOR/SENIOR HIGH SCHOOLS

SUBJECT AREAS	NUMBER OF SCHOOLS	PERCENTAGE
Water Pollution	24	85.7
Soil Conservation	23	82.1
Air Pollution	23	82.1
Forest Conservation	21	75.0
Wildlife Conservation	20	71.4
Agriculture Pollution	19	67.8
Energy Crisis	13	46.4
Environmental Economics	13	46.4
Birth Control	6	21.4
Foods	6	21.4
Disease Education	5	17.8
Drug Education	5	17.8
Housing	5	17.8
Race Relations	1	3.5
Medical Care and Costs	1	3.5
Crime Control	1	3.5

The three topics of water pollution, soil conservation and air pollution were being taught in better than 80% of the 28 schools. It is surprising to learn that race relations, medical care and costs, and crime control were only being taught in one school each.

3. If your school does not offer a course in environmental education, is environmental education taught by selected units in other courses?

Yes: 79 No: 2 No Response: 3

Special environmental education units were being taught in the high school courses shown in Table 3.3

TABLE 3.3

COURSES IN WHICH ENVIRONMENTAL EDUCATION IS TAUGHT AS A SPECIAL UNIT IN INDIANA JUNIOR/SENIOR HIGH SCHOOLS

COURSE TITLE	NUMBER OF SCHOOLS
Biology	66
General Science	47
Agriculture	44
Health Education	31
Earth Science	25
Senior Social Studies	22
Sociology	18
American History	11
Geography	3
Life Science	1
Horticulture	1
Economics	1
Junior High School Social Studies	1
Home Economics	1
Chemistry	1
Physics	1

4. If your school does not offer a course in environmental education as part of the regular curriculum, is it offered as a part of the extracurricular or club program of the school?

Yes: 17 No: 80 No Response: 15

The extracurricular and club activities used by the schools to instruct students in environmental education were: Science Club, Ecology Club, Conservation Club, Concerned Citizens for Better Government, Biology and Nature Study Club, Future Scientists of America, Future Farmers of America, and Claw Club. Programs for these organizations were developed to have student discussions, hear guest speakers, sponsor special environmental projects, and to make field trips.

5. If your school does not offer a course in environmental education during the regular school year, is it offered as a part of the summer school program?

Yes: 5 No: 96 No Response: 1

Responses to question 5 indicated that the environmental education courses were seldom offered in the summer school schedules. Summer school courses were identified as sociology summer camp, junior high school sciences, environmental biology and FFA achiever club.

6. In your personal opinion, do you think environmental education should be a part of your high school's curricular offering?

Yes: 90 No: 17 No Response: 5

School principals thought environmental education ought to be included in the curriculum in the following patterns:

Special Units in Other Courses	- 63
Separate Courses	- 33
Extracurricular Clubs and Activities	- 11
Summer School Courses	- 6

Freshmen through seniors were mentioned as being eligible to enroll in the environmental education courses offered in the high schools. Some principals recommended that environmental education

should be started in the elementary grades.

7. In your opinion, what professional preparation courses should an environmental educator have?

Table 3.4 shows the courses chosen by the principals for inclusion in the professional preparation of environmental educators.

TABLE 3.4

SUBJECTS RECOMMENDED BY INDIANA JUNIOR-SENIOR HIGH SCHOOL PRINCIPALS FOR TEACHER PREPARATION IN ENVIRONMENTAL EDUCATION

SUBJECT	FREQUENCY OF RESPONSE	SUBJECT	FREQUENCY OF RESPONSE
Conservation	91	Physiology	19
Biology	80	Limnology	19
Environmental Health	76	Political Science	18
Community Resources	60	Statistics	16
Health Education	48	Mathematics	14
Chemistry	48	Human Anatomy	12
Zoology	40	Epidemiology	7
Public Health Education	39	Earth Science	1
Physics	26	Agronomy	1
Microbiology	25	Agriculture	1
Genetics	24	Ecology	1
Nutrition	24	Problem Solving Techniques	1
Research	23	Behavioral Psychology	1

The five courses receiving the most votes for inclusion in the teacher preparation programs for environmental educators were conservation, biology, environmental health, community resources, health education, and chemistry. One principal commented that the teacher candidates would have to have all the courses listed and that is why he believed that environmental education cannot be offered in the high schools.

8. What aspects of environmental education should be given highest priority?

Table 3.5 shows the priorities given to the topic areas in environmental education classes.

TABLE 3.5

PRIORITY AND RANK ORDER OF ENVIRONMENTAL EDUCATION TOPICS AS SELECTED BY INDIANA JUNIOR-SENIOR HIGH SCHOOL PRINCIPALS

TOPIC	SCORE *	RANK
Energy Crisis	284	1.5
Water Pollution	284	1.5
Air Pollution	263	3
Environmental Economics	98	4
Soil Conservation	91	5
Drug Education	90	6
Crime Control	87	7
Birth Control	71	8
Foods	47	9
Wildlife Conservation	46	10
Forest Conservation	44	11
Disease Education	38	12
Agriculture Pollution	37	13
Housing	23	15
Race Relations	23	15
Medical Care and Costs	23	15

*Priority score is determined by a total of the ranks given by the principals. (Rank one = 10 points, two = 9, etc.)

The first five priorities of water pollution, energy crisis, air pollution, environmental economics, and soil conservation, although not always in this order, were endorsed by a large majority of the principals as the leading environmental problems of today's society.

Again, would our students endorse these same areas for top priority in the United States? What and how do students think about problems of man and his environment?

Chapter 4

ENVIRONMENTAL EDUCATION -- A SURVEY OF THE STATUS IN THE K-12 SCHOOLS IN INDIANA

The questionnaire was mailed in February, 1974, to all 48 principals of K-12 schools in the State of Indiana. The purpose of the writers was to learn how much environmental education was taught, where, and how it was taught. School principals were asked to point out subject areas prospective environmental education teachers need to include in their professional preparation, rank environmental education topics according to priority, and evaluate the importance of environmental education to the students and the school curriculums.

Forty-two questionnaires (87.5%) were returned by May, 1974. The data were computed question by question. The interpretations of the data and the questions are as follows:

1. Does your high school offer a course designated as environmental education?

   Yes: 1 No: 41

2. Does your school offer a course in environmental education, although not so designated?

   Yes: 8 No: 34

Titles used to describe environmental education courses included in the eight schools are shown in Table 4.1.

In those eight schools where a course in environment education is taught although not so designated, the courses were:

a. Elective in five schools
b. Required in one school
c. No response from two schools

TABLE 4.7

COURSES IN WHICH ENVIRONMENTAL
EDUCATION IS TAUGHT IN INDIANA K-12 SCHOOLS

COURSE TITLE	NUMBER OF SCHOOLS
Conservation	2
Environmental Health	2
Soil Conservation	1
Environmental Problems	1
Ecology	1
Advanced Biology and Earth Science	1

The courses were scheduled on an annual basis in five schools, on a semester basis in two schools. One school did not respond to the question.

Freshmen through seniors may enroll in the environmental education courses. Seven schools offered a total of 10 sections of environmental education. The total enrollment was 198; thus the average class size was approximately 20 students. The largest class enrollment was 58 students and the smallest was 10.

Again, schools were reluctant to use textbooks in the teaching of environmental education. Only two of the eight schools used a textbook. The texts used were Soil Use and Improvement and Field Biology and Ecology. Other schools used tapes, current resources, and teacher handouts in the teaching-learning process.

Environmental education was being taught in the subject areas shown in Table 4.2.

3. If your school does not offer a course in environmental education, is environmental education taught by selected units in other courses?

Yes: 32 No: 2

TABLE 4.2

SUBJECT AREAS TAUGHT IN ENVIRONMENTAL EDUCATION COURSES IN INDIANA K-12 SCHOOLS

SUBJECT AREAS	NUMBER OF SCHOOLS
Air Pollution	8
Water Pollution	8
Agriculture Pollution	6
Soil Conservation	6
Wildlife Conservation	6
Forest Conservation	6
Energy Crisis	5
Birth Control	4
Disease Education	4
Foods	3
Drug Education	3
Environmental Economics	2
Crime Control	2
Medical Care and Costs	2
Housing	2
Race Relations	1

Special environmental education units were taught in the school courses shown in Table 4.3.

4. If your school does not offer a course in environmental education as a part of the regular curriculum, is it offered as a part of the extracurricular or club programs of the school?

Yes: 4 No: 30

Student organizations were identified as the Outdoor Club, Service Council, Environmental Protection and Awareness Club, and Future Farmers of America. Two of the schools which offer environmental education courses also have clubs and extracurricular activities.

TABLE 4.3

COURSES IN WHICH ENVIRONMENTAL EDUCATION
IS TAUGHT AS A SPECIAL UNIT IN INDIANA K-12 SCHOOLS

COURSE TITLE	NUMBER OF SCHOOLS
Biology	23
General Science	20
Agriculture	12
Health Education	11
Earth Science	10
American History	7
Sociology	7
Senior Social Studies	4
Advanced Biology	1
English	1
Life Science	1

5. If your school does not offer a course in environmental during the regular school year, is it offered as a part of the summer school program?

   Only one of the 42 responding schools said Yes.

6. In your personal opinion, do you think environmental education should be a part of your high school's curricular offering?

   Yes: 33 No: 6 No Response: 2 Undecided: 1

Persons responding Yes to the question wanted environmental education scheduled as follows:

Special Units in Other Courses - 20
Separate Courses - 14
Extracurricular - 2
Summer - 1

Some of the principals indicated that environmental education should be taught in two or three different instructional patterns noted above.

7. In your opinion, what professional courses should an environmental educator have?

Table 4.4 shows the courses selected by the K-12 principals for consideration in the professional preparation of environmental educators.

TABLE 4.4

SUBJECTS RECOMMENDED BY INDIANA K-12 PRINCIPALS FOR THE PROFESSIONAL PREPARATION OF ENVIRONMENTAL EDUCATORS

SUBJECT	FREQUENCY OF RESPONSE	SUBJECT	FREQUENCY OF RESPONSE
Biology	33	Statistics	9
Conservation	31	Physiology	9
Environmental Health	30	Physics	7
Health Education	27	Microbiology	7
Community Resources	22	Mathematics	6
Chemistry	21	Human Anatomy	5
Zoology	18	Epidemiology	4
Public Health Education	16	Limnology	3
Genetics	13	Botany	2
Research	10	Ecology	1
Political Science	10	Taxonomy	1
Nutrition	9		

8. What aspects of environmental education should be given highest priority?

Table 4.5 shows the priorities given to the topic areas in environmental education classes.

TABLE 4.5

PRIORITY AND RANK ORDER OF ENVIRONMENTAL EDUCATION TOPICS AS SELECTED BY INDIANA K-12 PRINCIPALS

TOPIC	SCORE*	RANK
Water Pollution	76	1
Energy Crisis	68	2
Air Pollution	66	3
Birth Control	51	4.5
Soil Conservation	51	4.5
Environmental Economics	40	6
Crime Control	38	7
Drug Education	34	8
Wildlife Conservation	27	9.5
Forest Conservation	27	9.5
Race Relations	21	11
Disease Education	19	12
Agriculture Pollution	17	13
Foods	12	14
Housing	7	15
Medical Care and Costs	6	16
Population Dynamics	1	17

*Priority score is determined by a total of the ranks given by the principals. (Rank one = 10 points, two = 9, etc.)

The areas of water pollution, energy crisis, air pollution, birth control and soil conservation were given the top five priorities for discussion in environmental education classes. Such topics as foods, housing, and medical care and costs were given very limited support in the planning of the curriculum.

Chapter 5

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

A survey type of investigation cannot provide answers to all segments of environmental education in the high schools of Indiana. However, this study does reflect some of the conditions and issues having a bearing upon the status of environmental education in Indiana. It is hoped that the results of this research will provide a benchmark and a framework for discussion, reaction, and action among students, teachers, administrators, and taxpayers. If the study is of assistance in developing, strengthening, and advancing environmental education opportunities for "Hoosier" scholars, then the effort has been worthwhile.

Major Findings

1. Three hundred sixty-six (92.8%) of the 394 Indiana high school principals returned the questionnaire.

2. Of the 366 schools, 24 (6.5%) offered courses designated as environmental education.

3. Of the remaining 342 schools, 72 (21%) offered courses in environmental education although not so designated.

4. A total of 96 (26.2%) of the 366 Indiana high schools offered courses in environmental education.

5. Eight (8.3%) of the 96 schools offered environmental education courses as a graduation requirement for all students.

6. Seventy-seven (80.2%) of the 96 schools offered environmental education courses on an elective basis.

7. The course titles used most frequently to describe environmental education courses in Indiana high schools were conservation, ecology, biology, earth science and integrated science.

8. Fifty-five schools offered environmental education courses on a semester basis, twenty-nine on a two semester annual schedule, six on a one-quarter or one-half semester arrangement, and six schools did not respond to the question.

9. The average class size for environmental education courses was 22 students.

10. Class enrollments in environmental education classes ranged from 60 to 10 students.

11. The average number of environmental education courses scheduled per school was three.

12. Students in grades 9-12 were eligible to enroll in environmental education classes, but the enrollment was composed mainly of sophomores through seniors.

13. The five subject areas taught most frequently in environmental education courses were (in rank order - high to low) water pollution, air pollution, forest conservation, soil conservation, and wildlife conservation.

14. The topics being emphasized in the environmental education courses caused the researchers to conclude that in Indiana high schools conservation was environmental education.

15. Of the 270 schools which were not offering a separate course in environmental education 254 (94%) taught selected environmental education units in other courses.

16. The five courses used most frequently for inclusion of special environmental education units were biology, general science, health education, agriculture, and earth science (rank order - high to low).

17. Seventy-six (20.7%) of the 366 high schools offered environmental education as a part of their extracurricular or club programs.

18. Twenty (5.4%) of the 366 high schools offered environmental education courses as a part of their summer school programs.

19. Of the 366 principals, 299 (81.6%) thought environmental education should be a part of their high school's curricular offerings.

20. One hundred eighty-nine of the 299 principals thought environmental education should be taught through special units in other courses, 109 wanted it taught as a separate subject, 7 suggested summer programs, and 6 designated clubs and extracurricular activities as the best procedures for instructing students in matters of the environment.

21. In the opinion of the 366 school administrators, the five courses most important to the professional preparation of an environmental educator were: conservation, biology, environmental health, community resources, and health education (high to low order).

22. Principals gave the ten highest priorities in environmental education to the topics of: energy crisis, water pollution, air pollution, soil conservation, birth control, environmental economics, drug education, crime control, wildlife conservation, and forest conservation.

23. The topics taught in the environmental education courses were not in agreement with the priorities established by the principals as being key topics for presentation and discussion in the classrooms.

24. Thirty-six schools used textbooks in the teaching of environmental education classes and/or units.

Conclusions

1. The responses of the 366 Indiana high school principals (out of 394, 92.8%) indicated that they are extremely interested in environmental education programs for their students. The researchers express gratitude to the principals, who assisted in the study, for taking time out of their busy schedules to answer and return the questionnaires.

2. Only a few high schools in the State of Indiana teach environmental education as a separate subject.

3. The largest number of Indiana high schools teach environmental education through units in conservation courses.

4. Little attention is given to summer school programs in environmental education in the high schools of Indiana.

5. Textbooks do not present adequate coverage for all topics of environmental education, thus most Indiana high schools seldom use a textbook in their teaching of environmental education classes.

6. Environmental education is an extremely diversified subject matter which encompasses the languages, life sciences, earth sciences, physical sciences, public administration, social sciences, health, medicine, law, etc. This intermarriage of these specific subjects in their own right has been a difficult area to give adequate time and teaching expertise in high schools. One course or a series of courses will not provide all answers to all questions and concerns for all high school students. Inter-disciplinary planning is necessary to overcome this weakness.

7. The seeds of an environmental education program to be successful need to be planted in the public schools. Starting with the elementary schools, the roots can grow, thus providing a greater opportunity for affecting change in human behavior. What agency of society is better prepared and equipped to teach environmental education than are the schools?

8. The needs of environmental education are growing daily while the Indiana high school programs of environmental education are regressing. The growth rate of program development in environmental education for Indiana high schools has not kept pace with the emphasis man has given to himself and his environment.

9. Students are not likely to engage in environmental education activities through a mere study of course content to develop the cognitive domain. They need exposure to educators who strive to stimulate and develop positive attitudes toward environmental education since they are closely related to cultural beliefs and behavior. Individuals tend to become involved in those areas in which they become personally interested.

10. The evidence accumulated in this study points to too narrow a view of environmental education to have interest or appeal to high school students as a required subject area.

11. Summer school programs provide very limited opportunity for environmental education. The characteristics of an agarian school schedule darken the buildings of the urban school corporation with its broad and flexible schedule of classes for students.

Recommendations

On the basis of this investigation, the following recommendations seem justified:

1. An effective environmental education program should be developed on a nation-wide plan, educating Americans of all ages. Modern communications and transportation methods have reduced the time span for human contact; therefore, residents of Indiana and persons in the other 49 states have need for enlightenment in environmental education. People need to learn at an early age the effect of man on the environment and the effect of environment upon man. Human conservation is a major issue confronting mankind.

2. The United States Commissioner of Education should call a national conference on environmental education. Educational leaders should lead the way in giving directions to curriculum issues in the nation's schools. There is a need for having continuity in the environmental education programs K-12.

3. An environmental education knowledge test should be administered to students enrolled in grades 6, 9, and 12 of the Indiana public schools. The proposed study, then, would be designed to determine the current status of environmental education in the public schools of Indiana. Such a study is sorely needed since one of this type has never been conducted in the state. There is a real need to collect such baseline data so as to know precisely where we are--we can then project, plan, and implement programs in the future on such a base. Future environmental education decisions in the State, laws concerned with environmental education programming and environmental problems, teacher certification guidelines and

procedures are just a few of the many aspects within Indiana which may be influenced by the study findings. The study should be conducted jointly by environmental education personnel from Indiana State University, Purdue University, Indiana University and Ball State University.

4. The Superintendent, Indiana State Department of Public Instruction, should call a state-wide conference on environmental education. A major purpose of the meeting ought to be development of a state-wide environmental education plan for grades K-12. Selected pupils, teachers of K-12, principals, superintendents, and special consultants should participate.

5. Indiana institutions of higher learning, especially teacher education schools, should offer in-service environmental education workshops, courses, etc., to teachers, administrators and other interested individuals.

6. Textbooks and written resources should be written specifically for environmental education. There is a need for books to be written by the environmental experts for use in environmental classes.

7. Scheduling of environmental education in the Indiana high school curriculums should be reviewed with the idea of encouraging more students to enroll in environmental education courses.

8. Principals should meet as a group for purposes of discussing environmental education in the high schools of Indiana. Their comments on environmental education in their respective schools were accurate and to the point. Some of the comments were:

> "Any school that can cover environmental education in one easy 18 week course has the answer and can solve all the problems of the world. Just send me a copy of their secret formula and we can delete most of the courses we presently offer."
>
> "We the people of this country have progressed from one crisis to another on a continual basis and have attempted to solve each on an individual basis when all along each crisis has been basically caused by people. Why not some people solutions???"

"Environmental ethics--Defining and developing a healthy environmental ethic is the affective aspect of environmental education. It is one thing to say one is concerned--it is another to behave in a concerned manner."

"Environmental economics--money determines what, where, and when of most decision making. Money talks, consequently, we have to approach the problem from an economic stand-point. Convince people that we are making a 'money-mistake' and they will listen."

"In our society there tends to be an over-reaction to all stress situations. Actions are therefore taken which do not adequately consider the economic consequences, not only does this refer to cost-price factors, but more important, to the economic balance of our system. Most regulations and controls, price, health, environmental quality, etc., cause changes to occur in rates of consumption, supply, demand, cost, research and development, etc. Environmental actions must take into consideration economic impact."

"All problem(s) should be considered from problem solving techniques, because new problems will appear and therefore these techniques should have a carry-over value. Do not study problems just for the sake of studying."

"In an industrialized country, the total economy is based upon energy resources. All other aspects of the environment can be dealt with only in relationship to their effect on energy resources."

"Our society would have difficulty functioning both economically and environmentally if our present sources of energy are depleted or cut off and we haven't yet been able to come up with an alternative."

"The alarmist attitude of some and the apathy of others causes the general public to become confused. They don't know what to believe. This is true for all of the environmental education topics. Perhaps the energy crisis could be #1 on my list because it is of topmost today. But it proves my point about various opinions causing

confusion. Those of us in science have known atomic energy was needed or oil would be in short supply some time ago. But alarmists have scared the public--so here we are in a crisis.

"It seems to me that a large number of our environmental problems are very highly correlated to the population."

CLOSING

Doctor Rene Dubos, renowned researcher and spokesman for the Rockefeller Institute, stated: "It is simply not enough to be aware and concerned about environmental crises. The need is for action--action by you, for it is within the means of each individual to do something about it."

There is a great hazard for most young people, especially at this stage of their lives, and for most people always, that they have no proper insight into their own potential or actual obsolescence. This would seem to be especially meaningful for teachers and administrators and all of us are teachers--all of us are influencing others, certainly those of us who are parents. All of us tend to teach what we have already learned. And today, in most instances, certainly in many, this is completely inadequate. It seems a paradox, that in our attempts to deal with the future, so much of our study is in the past. Success in the future can hardly be more seriously threatened than by improper emphasis on the past. But to offset this emphasis on the past is the fact that our young citizens participating in public education today tend to be much more sophisticated than their teachers and parents (very young also). If not more sophisticated in fact, then more sophisticated than their teachers and parents fully appreciate.

Leo Rosten, who attacks the myths of our culture so gleefully, writes:

> . . . The history of man's politics is shameful, chronical of violence and greed, hate and vanity, foolish ambitions and vestigial fears. The history of man's beliefs is an absurd story of infidelity and superstition and infantile terrors and magical beguilements. The history of man's ideas is a story of incredible stupidity relieved by the occasional eruption of gifted or original or courageous thoughts. Inquiry has been hemmed in and harassed by fanaticism and ideas have been stifled, if not strangled, by dogmas.

Nothing terrifies some people as much as an idea which may involve the restructuring of their thoughts. John Dewey put it this way--

Freedom of thought denotes freedom to think, to doubt, to inquire, to create, to experiment when the results are not guaranteed and involve risks of waste, loss, and error.

We all see things as we are, not as they are. We, as humans, have an incredible capacity to hear what we want to hear, see what we want to see, and find the data to support that to which we are already committed.

We want and need people of vision in environmental education. The world in which we live will be the dream that we dare to dream. Good luck and God speed--dreamer.

RESOURCES FOR ENVIRONMENTAL EDUCATION

1. Total Environment Education, published by the Indiana State Department of Public Instruction, 1973.
   Includes model environmental education units, instructional objectives, and curriculum resources.

2. V. Eugene Vivian, Sourcebook for Environmental Education, The C.V. Mosby Company, St. Louis, 1973, price $5.95.
   Contents includes section of developing instructional materials, evaluation and objectives, as well as uses for environmental studies.

3. Environmental Conservation Education, a selected annotated bibliography, compiled for the Conservation Education Association, Interstate Printers and Publishers, Inc., Danville, Illinois, 1974, price $2.50.
   Organized by six levels: primary, upper elementary, junior high, senior high, college, and general reading.

4. ECOLOGY, POLLUTION, CONSERVATION-A Bibliography of Instructional Materials, for Elementary School Teachers, published by the Curriculum Research and Developmental Center at Indiana State University, Terre Haute, Indiana.
   This bibliography is the result of a survey of current selection aids and school library collections.

5. Journal of Environmental Education, published at Madison, Wisconsin, four times a year. The subscription price of magazine is $7.50 a year.
   Excellent publication for teachers to keep up-to-date on environmental happenings.

6. Critical Index of Films on Man and His Environment (with 1972 supplement), by the Conservation Education Association, Interstate Printers and Publishers, Danville, Illinois.
   A must for those who believe visual aids are a good device to impart understanding of the inter-relationships of man and his environment.

7. Outdoor Indiana, Indiana Department of Conservation, Room 612, State Office Building, Indianapolis, Indiana.
   Periodical of wide-ranging interest, excellent for student browsing.

8. Teaching Conservation in Indiana Schools, State Department of Public Instruction, Bulletin No. 232, 1959.
   Still a useful publication with a more traditional orientation.

9. Ralph and Mildred, Buchsbaum, Basic Ecology, Boxwood Press, 1957.
   A classic little book for the beginning student in ecology.

10. John H. Storer, The Web of Life: A First Book of Ecology, New American Library, New York, 1953.
    A good, inexpensive paperback, very readable and understandable, for the middle grades especially.

11. Self-Contained Teacher Developed Modules on Environmental Pollution, Interstate Printers and Publishers, Danville, Illinois.
    Each module features a comprehensive factual teacher's manual written to stimulate student participation. Scientific experiments, including all chemicals and apparatus, and visual aids provided.

An Atmosphere in Crisis	- $34.00
Death of a River	- $29.00
Noise Pollution	- $24.00
Solid Waste Recycling	- $58.00

12. People and Their Environment, J. G. Ferguson Publishing Company, 100 Park Avenue, New York City, New York, 10017.
    K-12 interdisciplinary environmental education curriculum guide.

13. Environmental Discovery Series, Minnesota Environmental Sciences Foundation, Inc., National Wildlife Federation, Washington, D.C.
    Some of the units in the series are water quality, change in a small ecosystem, micro-communities, man's habitat--the city.

14. Clifford and Virginia Emauelson, Conservation Quickies, Interstate Printers and Publishers, Danville, Illinois.
    Valuable teaching aid for teachers, agencies, and organizations.

15. John F. Gardner, A Book of Nature Activities, Interstate Printers and Publishers, Danville, Illinois.
Provide interesting experiences in the field of nature activities for elementary students.

16. John Deedy and Philip Nobile, The Complete Ecology Fact Book, Doubleday (Anchor) Company, Berryville, Virginia, 22611.
This is a unique reference containing all the facts of ecological problems: population, endangered species, pollution, detergents, food supplies, pesticides, nonrenewable resources and solid wastes.

17. Lynton Keith Caldwell, Environment: A Challenge to Modern Society, Doubleday (Anchor) Company, Berryville, Virginia, 22611.
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24. William O. Douglas, My Wilderness, Doubleday and Company, Garden City, 1960.
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A classic in the field, and in many ways the book that started it all.

28. Helen Heffernan and George Shaftel, The Water Story, L. W. Singer Company, 1963, Chicago.
One of a series of booklets that are especially good for upper elementary grade students. See also The Soil Story, The Mineral Story, The Forestry Story, The Energy Story.

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34. Robert W. Burchell and George Hagevik, The Environmental Impact Handbook, Transaction, 1974.
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The authors consider one dimension of human ecology--the interplay between housing and outlook between the physical realities of a dwelling unit and the attitudes and responses of its inhabitants.

36. Nigel Calder (Editor), Nature in the Round, Viking.
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